

REMARKS/ARGUMENTS

In the Office Action mailed on February 12, 2009, claims 1, 4-6, and 8-23 are rejected. Additionally, the specification is objected to. In response, claims 1, 4-6, 8, 10-12 and 15 have been amended, claims 9, 13, 14, and 16-23 have been canceled, and new claims 24-34 have been added. Additionally, the specification has been amended. Applicant hereby requests reconsideration of the application in view of the amendments and the below-provided remarks.

Objections to the Specification

Regarding the Office Action's suggestion to add section headings, Applicant respectfully declines because the indicated suggestions in 37 C.F.R. § 1.77(b) are not statutorily required for filing a non-provisional patent application under 35 USC § 111(a), but per 37 C.F.R. § 1.51(b) are only guidelines that are suggested for Applicant's use. The section headings are not mandatory, and in fact when Rule 77 was amended in 1996 (61 FR 42790, Aug. 19, 1996), Bruce A. Lehman, Assistant Secretary of Commerce and Commissioner of Patents and Trademarks, stated in the Official Gazette:

“Section 1.77 is permissive rather than mandatory. ... 1.77 merely expresses the Office's preference for the arrangement of the application elements. The Office may advise an applicant that the application does not comply with the format set forth in 1.77, and suggest this format for the applicant's consideration; however, the Office will not require any application to comply with the format set forth in 1.77.”

In view of the above, Applicant prefers not to add section headings.

Regarding the Office Action's suggestion to add a statement indicating that like reference labels in Fig. 4 refer to the same features described in Fig. 4, Applicant has amended the specification to include the sentence “Like reference labels in Fig. 4 refer to the same features described in Fig. 2.”

Thus, Applicant respectfully requests that the objections to the specification be withdrawn.

Claim Rejections under 35 U.S.C. 112

Claims 1, 4-6, 8, 9, 10-16, and 17-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In response, claims 1 and 10 have been amended to recite “in each state one branch port of the at least two branch ports is connected to the common port and the rest of the at least two branch ports are disconnected from the common port”, which is supported in Applicant’s specification at, for example, original claims 1 and 9, Fig. 2, Fig. 4, and page 6, lines 1-4. Additionally, as described above, claims 9, 13, 14, and 16-23 have been canceled. Thus, Applicant respectfully submits that claims 1, 4-6, 8, 10-12, and 15 particularly point out and distinctly claim the subject matter which Applicant regards as the invention. As a result, Applicant respectfully requests that the claim objections under 35 U.S.C. 112, second paragraph be withdrawn.

Claim Rejections under 35 U.S.C. 103

Claims 1 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heckaman et al. (U.S. Pat. No. 5,272,457, hereinafter “Heckaman”) in view of Even-or (U.S. Pat. No. 5,212,408, hereinafter “Even-or”). Additionally, claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heckaman in view of Even-or and further in view of Atokawa et al. (U.S. Pat. No. 6,970,056, hereinafter “Atokawa”). However, Applicant respectfully submits that the pending claims are patentable over the cited prior art for the reasons provided below.

Independent Claim 1

Claim 1 has been amended to particularly recite in part that “*the first switches are configured so that all of the first switches are not in the first state simultaneously.*” Additionally, claim 1 has been amended to replace the term “where” with the term “wherein.” Support for the amendments to claim 1 is found in Applicant’s specification at, for example, original claim 1, Fig. 2, Fig. 4, page 2, lines 14-18, page 5, lines 18-22, and page 6, lines 1-22.

As amended, claim 1 recites:

“A switch circuit comprising:

at least two input terminals and one output terminal,
first switches, each first switch comprising a first and second port, each first switch being electronically switchable between a first state, wherein the first port is disconnected from the second port, and a second state, wherein the first port is connected to the second port, wherein each of the input terminals is connected to a first port of a respective one of said first switches, and

a second switch with at least two branch ports and a common port coupled to said output terminal, said second switch electronically switchable between different states, wherein in each state one branch port of the at least two branch ports is connected to the common port and the rest of the at least two branch ports are disconnected from the common port, wherein each of the branch ports is connected to a second port of one of said first switches;

wherein the first switches are configured so that all of the first switches are not in the first state simultaneously.” (emphasis added).

Applicant respectfully asserts that Heckaman fails to teach that “*the first switches are configured so that all of the first switches are not in the first state simultaneously,*” as recited in amended claim 1.

With reference to Fig. 6, Heckaman teaches that bias voltages are applied to SPST modules (20) and (22). (See also the paragraph between column 5, line 56 and column 6, line 2). However, Heckaman teaches that both SPST module (20) and SPST module (22) can be turned off. (See column 6, line 2). That is, Heckaman teaches that for both SPST module (20) and SPST module (22), the input terminal can be disconnected from the output terminal. Thus, Applicant respectfully asserts that Heckaman fails to teach that “*the first switches are configured so that all of the first switches are not in the first state simultaneously,*” as recited in amended claim 1.

Because Heckaman fails to teach the above-identified limitation of amended claim 1, Applicant respectfully asserts that amended claim 1 is patentable over Heckaman in view of Even-or.

Dependent Claims 4-6 and 8

Claims 4-6 and 8 have been amended to replace the term “where” with the term “wherein.” Additionally, claim 6 has been amended to replace the phrase “the control circuit” with the phrase “a control circuit.” Claims 4-6 and 8 depend from and

incorporate all of the limitations of independent claim 1. Thus, Applicant respectfully asserts that claims 4-6 and 8 are allowable at least based on an allowable claim 1.

Independent Claim 10

Claim 10 has been amended in a similar fashion to claim 1. Support for the amendments to claim 10 is found in Applicant's specification at, for example, original claims 1 and 9, Fig. 2, Fig. 4, page 2, lines 14-18, page 5, lines 18-22, and page 6, lines 1-22. Because of the similarities between amended claim 10 and amended claim 1, Applicant respectfully asserts that the remarks provided above with regard to amended claim 1 apply also to amended claim 10. Accordingly, Applicant respectfully asserts that amended claim 10 is patentable over Heckaman in view of Even-or and further in view of Atokawa.

Dependent Claims 11, 12, and 15

Claims 11, 12, and 15 have been amended to replace the term "where" with the term "wherein." Claims 11, 12, and 15 depend from and incorporate all of the limitations of independent claim 10. Thus, Applicant respectfully asserts that claims 11, 12, and 15 are allowable at least based on an allowable claim 10.

New Claims 24 – 34

New claims 24-34 have been added. Support for claims 24 and 25 is found in Applicant's specification at, for example, original claims 1-3, Fig. 2, Fig. 4, page 2, lines 14-18, page 5, lines 18-22, and page 6, lines 1-22. Support for claims 26 and 32 is found in Applicant's specification at, for example, original claims 1 and 9, Fig. 1, Fig. 2, Fig. 4, page 2, lines 14-18, page 3, lines 17-25, page 4, lines 21-30, page 5, lines 18-22, and page 6, lines 1-22. Support for claims 27 and 29 is found in Applicant's specification at, for example, original claims 1, 7, and 9, Fig. 2, Fig. 4, page 2, lines 14-18, page 5, lines 18-29, and page 6, lines 1-22. Support for claims 28 and 30 is found in Applicant's specification at, for example, original claims 1, 7, and 9, Fig. 2, Fig. 4, page 2, lines 14-18, page 5, lines 18-29, page 6, lines 1-22, and page 7, lines 9-14. Support for claim 31 is found in Applicant's specification at, for example, original claims 1 and 8, Fig. 2, Fig. 4,

page 2, lines 14-18, page 5, lines 12-22, and page 6, lines 1-22. Support for claims 33 and 34 is found in Applicant's specification at, for example, original claims 1 and 9, Fig. 1, Fig. 2, Fig. 4, page 2, lines 14-18, page 3, lines 17-25, page 4, lines 1-8 and lines 21-30, page 5, lines 18-22, and page 6, lines 1-22.

Claims 24-28 depend from and incorporate all of the limitations of independent claim 1. Thus, Applicant respectfully asserts that claims 24-28 are allowable at least based on an allowable claim 1. Claims 29-34 depend from and incorporate all of the limitations of independent claim 10. Thus, Applicant respectfully asserts that claims 29-34 are allowable at least based on an allowable claim 10. Additionally, claims 26-34 may be allowable for further reasons, as described below.

Claims 26 and 32

Claim 26 recites in part that “*one of the at least two input terminals is connected to a terrestrial TV antenna and another of the at least two input terminals is connected to a TV cable network, wherein one of the first switches receives a first TV signal from the terrestrial TV antenna and another of the first switches receives a second TV signal from the TV cable network*” (emphasis added). Claim 32 recites limitations similar to claim 26. Applicant respectfully asserts that the cited prior art, either alone or in combination, fails to teach the above-identified limitations of claims 26 and 32.

In particular, with reference to Fig. 6, Heckaman teaches that SPST modules (20) and (22) have high frequency inputs (28) and (30). (See also the paragraph between column 5, line 56 and column 6, line 2). However, Heckaman fails to teach that one of the high frequency inputs (28) and (30) is connected to a terrestrial TV antenna and receives TV signals from the terrestrial TV antenna. Heckaman also fails to teach that another of the high frequency inputs (28) and (30) is connected to a TV cable network and receives TV signals from the TV cable network.

With reference to Fig. 1A, Even-or teaches that two diodes (D1) and (D2) have an RF signal input RF_{IN}. (See also column 3, lines 25-28). However, Even-or fails to teach that the RF signal input RF_{IN} of the two diodes (D1) and (D2) is connected to a terrestrial TV antenna or to a TV cable network.

With reference to Fig. 1, Atokawa teaches that a main antenna (8) is connected to an on-off switch (6) and that a diversity antenna (9) is connected to an on-off switch (7). (See also column 4, lines 28-31). However, Atokawa fails to teach that one of the on-off switches (6) and (7) is connected to a terrestrial TV antenna and receives TV signals from the terrestrial TV antenna. Atokawa also fails to teach another of the on-off switches (6) and (7) is connected to a TV cable network and receives TV signals from the TV cable network.

Thus, Applicant respectfully asserts that the cited prior art, either alone or in combination, fails to teach the above-identified limitations of claims 26 and 32.

Claims 27 and 29

Claims 27 and 29 recite in part that “*the control circuit comprises a control terminal, a first driver circuit, and a second driver circuit, wherein the first driver circuit provides a first voltage signal to drive one of the first switches, wherein the second driver circuit provides a second voltage signal to drive another of the first switches, wherein the first voltage signal is an inversion of the second voltage signal, the first voltage signal and the second voltage signal being generated from a voltage signal provided at the control terminal” (emphasis added). Applicant respectfully asserts that Heckaman fails to teach the above-identified limitations of claims 27 and 29.*

As described above, Heckaman teaches that bias voltages are applied to SPST modules (20) and (22) through bias voltage inputs (32) and (34). (See Fig. 6 and the paragraph between column 5, line 56 and column 6, line 2). However, Heckaman is silent on how the bias voltage applied through the bias voltage input (32) and the bias voltage applied through the bias voltage input (34) are generated. As a result, Heckaman fails to teach that the bias voltage applied through the bias voltage input (32) and the bias voltage applied through the bias voltage input (34) are generated from the same voltage signal. Additionally, Heckaman fails to teach a driver circuit that provides the bias voltage through the bias voltage input (32) to drive the SPST module (20) and another driver circuit that provides the bias voltage through the bias voltage input (34) to drive the SPST module (22). Thus, Applicant respectfully asserts that the cited prior art fails to teach all of the limitations of claims 27 and 29.

Claims 28 and 30

Claims 28 and 30 depend from and incorporate all of the limitations of claims 27 and 29, respectively. Thus, Applicant respectfully asserts that claims 28 and 30 are allowable at least based on allowable claims 27 and 29, respectively.

Additionally, claims 28 and 30 recite in part that “*the control circuit further comprises a resistive divider network coupled to the first driver circuit, the resistive divider network being configured to obtain a third voltage signal from the first voltage signal and to control the second switch using the third voltage signal” (emphasis added). Applicant respectfully asserts that Heckaman fails to teach the above-identified limitations of claims 28 and 30.*

Heckaman teaches two SPST modules (20) and (22) and an SPDT module (24). (See Fig. 6 and column 5, lines 49-55). As described above, Heckaman fails to teach a driver circuit that provides the bias voltage through the bias voltage input (32) to drive the SPST module (20) and another driver circuit that provides the bias voltage through the bias voltage input (34) to drive the SPST module (22). As a result, Heckaman fails to teach “*a resistive divider network coupled to the first driver circuit,*” as recited in claims 28 and 30. Thus, Applicant respectfully asserts that the cited prior art fails to teach all of the limitations of claims 28 and 30.

Claim 31

Claim 31 recites in part that “*the tuner circuit includes an I^2C transceiver configured to receive commands via an I^2C bus and to use the commands to control the switch circuit*” (emphasis added). Applicant respectfully asserts that Atokawa fails to teach the above-identified limitations of claim 31.

With reference to Fig. 1, Atokawa teaches a transmission filter (2), a reception filter (3), and a change-over switch (4). (See also column 4, lines 14-20). However, Atokawa fails to teach that the transmission filter (2) and the reception filter (3) form an I^2C transceiver. Additionally, Atokawa fails to teach that the transmission filter (2) and the reception filter (3) receive commands via an I^2C bus and use the commands to control the change-over switch (4). Thus, Atokawa fails to teach that “*the tuner circuit includes an I^2C transceiver configured to receive commands via an I^2C bus and to use the*

commands to control the switch circuit” (emphasis added), as recited in claim 31. As a result, Applicant respectfully asserts that the cited prior art fails to teach all of the limitations of claim 31.

Claims 33 and 34

Claims 33 and 34 depend from and incorporate all of the limitations of claim 32. Thus, Applicant respectfully asserts that claims 33 and 34 are allowable at least based on an allowable claim 32.

Additionally, claim 33 recites:

“A receiver set comprising a set top box and a TV device coupled to the set top box, wherein the set top box includes the receiver circuit of claim 32.” (emphasis added)

Claim 34 recites:

“A computer system comprising a TV card and a computer monitor coupled to the TV card, wherein the TV card includes the receiver circuit of claim 32.” (emphasis added)

Applicant respectfully asserts that Heckaman, Even-or, and Atokawa fail to teach “*a set top box and a TV device coupled to the set top box*” as recited in claim 33 and “*a TV card and a computer monitor coupled to the TV card*” as recited in claim 34. Thus, Applicant respectfully asserts that Heckaman, Even-or, and Atokawa fail to teach all of the limitations of claims 33 and 34.

CONCLUSION

Applicant respectfully requests reconsideration of the claims in view of the amendments and remarks made herein. A notice of allowance is earnestly solicited.

At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account **50-4019** pursuant to 37 C.F.R. 1.25. Additionally, please charge any fees to Deposit Account **50-4019** under 37 C.F.R. 1.16, 1.17, 1.19, 1.20 and 1.21.

Respectfully submitted,

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Date: May 12, 2009

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